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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/778,087	02/07/2001	Takahiro Ishikawa	1538.1010	4567

21171 7590 01/29/2004

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EXAMINER

YIGDALL, MICHAEL J

ART UNIT	PAPER NUMBER
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2122

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DATE MAILED: 01/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/778,087

Applicant(s)

ISHIKAWA ET AL.

Examiner

Michael J. Yigdal

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 07 February 2001 and 24 April 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. Claims 1-12 are pending and have been examined. The priority date considered for the application is 5 October 2000.

#### ***Specification***

2. The abstract of the disclosure is objected to because the abstract must not exceed 150 words. Correction is required. See MPEP § 608.01(b).

#### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 5,613,120 to Palay et al. (hereinafter Palay) in view of U.S. Pat. No. 5,452,461 to Umekita et al. (hereinafter Umekita).

With respect to claim 1, Palay discloses a storage medium for storing a compiler to compile a source program in an object-oriented programming language (see the title and abstract; see also FIG. 2, which shows storage media 208 and 214 storing compiler 104), said compiler comprising the steps of:

- (a) if a class-type variable is contained in an execution statement, generating an instruction to call a construction instruction routine for an object of the class before said

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execution statement (see column 27, lines 65-67, and column 28, lines 1-11, which shows generating a constructor, i.e. an instruction to call a construction instruction routine, when an object is defined, i.e. when a class-type variable is contained in an execution statement; note that a constructor is invoked before an object is used); and

(b) if a class-type variable is contained in an execution statement, generating an instruction to call a destruction instruction routine for an object of the class after said execution statement (see column 27, lines 65-67, and column 28, lines 1-11, which shows generating a destructor, i.e. an instruction to call a destruction instruction routine, when an object is defined, i.e. when a class-type variable is contained in an execution statement; note that a destructor is invoked after an object is used).

Palay does not disclose the limitation wherein the execution statements are to be executed in parallel or parallelized by a parallelization directive.

Umekita discloses a system for parallelizing a source program (see the title and abstract; see also parallel compiler 213 in FIG. 27) so that it may be executed in parallel with high efficiency (see column 1, lines 41-53).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the parallelization features taught by Umekita in the system of Palay so that a program may be compiled for parallel execution, for the purpose of improving efficiency.

With respect to claim 2, Palay further discloses the steps of:

when generating an intermediate language from said source program (see step 506 in FIG. 5, and column 8, lines 50-55, which shows generating an object file; see also FIG. 1, which shows that the object file is an intermediate representation),

(a) allocating a construction and destruction instruction information region in the intermediate language of the class, if a class variable which has possibility to be executed in parallel is specified (see column 12, lines 10-14, and class information region 406 in FIG. 4; note that the class information is generated for all classes, including those having the possibility of parallel execution); and

(b) storing into said construction and destruction instruction information region, information concerning a construction instruction routine and a destruction instruction routine of an object of the class (see column 12, lines 15-26, which shows storing information into the class information region; see also column 27, lines 39-67, and column 28, lines 1-11, which further shows storing information regarding constructors and destructors), and

wherein information stored in said construction and destruction instruction information region is used in said steps of generating an instruction to call a construction instruction routine and generating an instruction to call a destruction instruction routine (see column 12, lines 27-33, which shows that the information is used by the linker for generating class instances; see also column 27, lines 65-67, and column 28, lines 1-7, which shows that the linker uses the information regarding constructors and destructors).

With respect to claim 3, Palay further discloses the limitation wherein said construction and destruction instruction information region is structured so as to be accessed from the type information of said class (see FIG. 4, which shows the structure of the object file; see also column 12, lines 52-59, which shows that the information corresponds to type information of a class; see also column 27, lines 65-67, and column 28, lines 1-7, which further shows that the information comprises constructors and destructors).

With respect to claim 4, Palay does not disclose the limitation wherein said compiler is a compiler for a parallel computer with shared memory.

Palay does show a computer having one or more processors and a main memory (see FIG. 2 and column 8, lines 16-28).

Umekita further discloses a compiler for a parallel computer with shared memory (see parallel compiler 213 in FIG. 27; see also column 5, lines 30-27, which shows a computer having a plurality of processors and shared memory), in a system for parallelizing a source program (see the title and abstract) so that it may be executed in parallel with high efficiency (see column 1, lines 41-53).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the parallelization features taught by Umekita in the system of Palay so that a program may be compiled for parallel execution, for the purpose of improving efficiency.

With respect to claim 5, see the explanation for claim 1 above. Note that claim 5 recites a compiling apparatus that is analogous to the compiler stored in the storage medium recited in claim 1.

With respect to claim 6, see the explanation for claim 2 above.

With respect to claim 7, see the explanation for claim 3 above.

With respect to claim 8, see the explanation for claim 4 above.

With respect to claim 9, see the explanation for claim 1 above. Note that claim 9 recites a compiling method that is analogous to the steps performed by the compiler stored in the storage medium recited in claim 1.

With respect to claim 10, see the explanation for claim 2 above.

With respect to claim 11, see the explanation for claim 3 above.

With respect to claim 12, see the explanation for claim 4 above.

### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Pat. No. 5,937,192 to Martin discloses a system for compiling object-oriented programs to be executed on a plurality of processors. U.S. Pat. No. 6,253,371 to Iwasawa et al. discloses a system for enabling the parallelization of a source program.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Yigdall whose telephone number is (703) 305-0352. The examiner can normally be reached on Monday through Friday from 8:00am to 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam can be reached on (703) 305-4552. The fax phone number for the organization where this application or proceeding is assigned is (703) 746-7239.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

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MY

Michael J. Yigdall  
Examiner  
Art Unit 2122

mjy  
January 16, 2004



**TUAN DAM**  
**SUPERVISORY PATENT EXAMINER**